Dynamic Font Scaling

Dynamic Font Scaling Play+ provides a comprehensive system for dynamic font scaling that ensures optimal readability across all device sizes. This system combines responsive typography with fluid scaling techniques to create a seamless reading experience. Overview ■ The dynamic font scaling system includes: Responsive font sizes that adapt to screen size Fluid typography using CSS custom properties Consistent line heights for optimal readability Accessible font scaling that respects user preferences Performance-optimized calculations CSS Custom Properties for Typography ■ Root Typography Variables ■ :root { /* Base font settings */ --font-family-sans-serif : -apple-system , BlinkMacSystemFont , "Segoe UI" , Roboto , "Helvetica Neue" , Arial , sans-serif ; --font-family-monospace : SFMono-Regular , Menlo , Monaco , Consolas , "Liberation Mono" , "Courier New" , monospace ; /* Base font size and line height */ --font-size-base : 1 rem ; --line-height-base : 1.6 ; /* Font weight scale */ --font-weight-light : 300 ; --font-weight-normal : 400 ; --font-weight-medium : 500 ; --font-weight-semibold : 600 ; --font-weight-bold : 700 ; /* Responsive font size scale */ --font-size-xs : clamp (0.75 rem , 0.7 rem + 0.25 vw , 0.875 rem) ; --font-size-sm : clamp (0.875 rem , 0.8 rem + 0.375 vw , 1 rem) ; --font-size-base : clamp (1 rem , 0.9 rem + 0.5 vw , 1.125 rem) ; --font-size-lg : clamp (1.125 rem , 1 rem + 0.625 vw , 1.25 rem) ; --font-size-xl : clamp (1.25 rem , 1.1 rem + 0.75 vw , 1.5 rem) ; --font-size-2xl : clamp (1.5 rem , 1.3 rem + 1 vw , 2 rem) ; --font-size-3xl : clamp (2 rem , 1.8 rem + 1.25 vw , 2.5 rem) ; --font-size-4xl : clamp (2.5 rem , 2.2 rem + 1.5 vw , 3 rem) ; --font-size-5xl : clamp (3 rem , 2.6 rem + 2 vw , 4 rem) ; } Responsive Typography Classes ■ Heading Classes ■ /* Display headings */ .display-1 { font-size : var (--font-size-5xl) ; font-weight : var (--font-weight-light) ; line-height : 1.2 ; } .display-2 { font-size : var (--font-size-4xl) ; font-weight : var (--font-weight-light) ; line-height : 1.2 ; } .display-3 { font-size : var (--font-size-3xl) ; font-weight : var (--font-weight-light) ; line-height : 1.2 ; } .display-4 { font-size : var (--font-size-2xl) ; font-weight : var (--font-weight-light) ; line-height : 1.2 ; } .display-5 { font-size : var (--font-size-xl) ; font-weight : var (--font-weight-light) ; line-height : 1.2 ; } .display-6 { font-size : var (--font-size-lg) ; font-weight : var (--font-weight-light) ; line-height : 1.2 ; } /* Regular headings */ .h1 , h1 { font-size : var (--font-size-3xl) ; font-weight : var (--font-weight-semibold) ; line-height : 1.2 ; margin-bottom : 0.5 rem ; } .h2 , h2 { font-size : var (--font-size-2xl) ; font-weight : var (--font-weight-semibold) ;

line-height : 1.3 ; margin-bottom : 0.5 rem ; } .h3 , h3 { font-size : var (--font-size-xl) ; font-weight : var (--font-weight-medium) ; line-height : 1.4 ; margin-bottom : 0.5 rem ; } .h4 , h4 { font-size : var (--font-size-lg) ; font-weight : var (--font-weight-medium) ; line-height : 1.4 ; margin-bottom : 0.5 rem ; } .h5 , h5 { font-size : var (--font-size-base) ; font-weight : var (--font-weight-medium) ; line-height : 1.5 ; margin-bottom : 0.5 rem ; } .h6 , h6 { font-size : var (--font-size-sm) ; font-weight : var (--font-weight-medium) ; line-height : 1.5 ; margin-bottom : 0.5 rem ; } Body Text Classes ■ /* Body text */ .lead { font-size : var (--font-size-lg) ; font-weight : var (--font-weight-normal) ; line-height : 1.5 ; } p { font-size : var (--font-size-base) ; font-weight : var (--font-weight-normal) ; line-height : var (--line-height-base) ; margin-top : 1 rem ; margin-bottom : 1 rem ; } /* Small text */ .small , small { font-size : var (--font-size-sm) ; line-height : 1.5 ; } /* Extra small text */ .text-xs { font-size : var (--font-size-xs) ; line-height : 1.5 ; } Fluid Typography Implementation ■ Using CSS clamp() ■ /* Fluid heading sizes */ .fluid-heading { font-size : clamp (1.5 rem , 4 vw + 1 rem , 3 rem) ; line-height : 1.2 ; } .fluid-subheading { font-size : clamp (1.125 rem , 2.5 vw + 0.75 rem , 1.75 rem) ; line-height : 1.3 ; } .fluid-body { font-size : clamp (1 rem , 1 vw + 0.875 rem , 1.125 rem) ; line-height : 1.6 ; } Responsive Font Size Mixins ■ // SCSS mixin for fluid typography @mixin fluid-type($min-vw, $max-vw, $min-size, $max-size) { $u1: unit($min-vw); $u2: unit($max-vw); $u3: unit($min-size); $u4: unit($max-size); @if $u1 == $u2 and $u1 == $u3 and $u1 == $u4 { & { font-size: $min-size; @media screen and (min-width: $min-vw) { font-size: calc(#{$min-size} + #{strip-unit($max-size - $min-size)} * ((100vw - #{$min-vw}) / #{strip-unit($max-vw - $min-vw)})); } @media screen and (min-width: $max-vw) { font-size: $max-size; } } } } // Usage .fluid-text { @include fluid-type(320px, 1200px, 16px, 18px); } Responsive Typography Utilities ■ Font Size Utilities ■ /* Responsive font size utilities */ .fs-1 { font-size : var (--font-size-5xl) !important ; } .fs-2 { font-size : var (--font-size-4xl) !important ; } .fs-3 { font-size : var (--font-size-3xl) !important ; } .fs-4 { font-size : var (--font-size-2xl) !important ; } .fs-5 { font-size : var (--font-size-xl) !important ; } .fs-6 { font-size : var (--font-size-lg) !important ; } /* Responsive font sizes */ @media (min-width : 576 px) { .fs-sm-1 { font-size : var (--font-size-5xl) !important ; } .fs-sm-2 { font-size : var (--font-size-4xl) !important ; } /* ... more responsive sizes */ } @media (min-width : 768 px) { .fs-md-1 { font-size : var (--font-size-5xl) !important ; } .fs-md-2 { font-size : var (--font-size-4xl) !important ; } /* ... more responsive sizes */ } Line Height Utilities ■ /* Line height utilities */ .lh-1 { line-height : 1 !important ; } .lh-sm { line-height : 1.25 !important ; } .lh-base { line-height : 1.5 !important ; } .lh-lg { line-height : 2 !important ; } Accessibility

Considerations ■ Respecting User Preferences ■ /* Respect user's font size preferences */ @media (prefers-reduced-motion : reduce) { * { animation-duration : 0.01 ms !important ; animation-iteration-count : 1 !important ; transition-duration : 0.01 ms !important ; } } /* High contrast mode support */ @media (prefers-contrast : high) { :root { --font-weight-normal : 500 ; --font-weight-medium : 600 ; --font-weight-semibold : 700 ; } } Minimum Readable Sizes ■ /* Ensure minimum readable font sizes */ body { font-size : max (16 px , var (--font-size-base)) ; } .small , small { font-size : max (14 px , var (--font-size-sm)) ; } .text-xs { font-size : max (12 px , var (--font-size-xs)) ; } Hero Section with Fluid Typography ■ < section class = " hero " > < div class = " container " > < div class = " row " > < div class = " col-12 " > < h1 class = " fluid-heading mb-4 " > Welcome to Our Platform </ h1 > < p class = " fluid-body lead mb-4 " > Discover amazing features and possibilities with our innovative solution. </ p > < button class = " btn btn-primary btn-lg " > Get Started </ button > </ div > </ div > </ div > </ section > .hero { padding : 4 rem 0 ; text-align : center ; } .fluid-heading { font-size : clamp (2 rem , 5 vw + 1 rem , 4 rem) ; font-weight : var (--font-weight-bold) ; line-height : 1.1 ; margin-bottom : 1.5 rem ; } .fluid-body { font-size : clamp (1.125 rem , 1.5 vw + 0.875 rem , 1.5 rem) ; line-height : 1.5 ; max-width : 600 px ; margin : 0 auto ; } Article Typography ■ < article class = " article " > < header class = " article-header " > < h1 class = " article-title " > Article Title </ h1 > < p class = " article-meta " > Published on < time > 2024-01-15 </ time > </ p > </ header > < div class = " article-content " > < p class = " article-lead " > This is the lead paragraph that introduces the article content. </ p > < h2 > Section Heading </ h2 > < p > Regular paragraph content with optimal line height and spacing. </ p > < h3 > Subsection Heading </ h3 > < p > More content with consistent typography scaling. </ p > </ div > </ article > .article { max-width : 65 ch ; margin : 0 auto ; padding : 2 rem 0 ; } .article-title { font-size : clamp (2 rem , 4 vw + 1 rem , 3 rem) ; font-weight : var (--font-weight-bold) ; line-height : 1.2 ; margin-bottom : 1 rem ; } .article-meta { font-size : var (--font-size-sm) ; color : var (--text-muted) ; margin-bottom : 2 rem ; } .article-lead { font-size : var (--font-size-lg) ; font-weight : var (--font-weight-medium) ; line-height : 1.6 ; margin-bottom : 2 rem ; } .article-content h2 { font-size : clamp (1.5 rem , 2.5 vw + 1 rem , 2 rem) ; margin-top : 3 rem ; margin-bottom : 1 rem ; } .article-content h3 { font-size : clamp (1.25 rem , 2 vw + 0.875 rem , 1.5 rem) ; margin-top : 2 rem ; margin-bottom : 0.75 rem ; } .article-content p { font-size : var (--font-size-base) ; line-height : var (--line-height-base) ; margin-bottom : 1.5 rem ; } Performance Optimization ■ CSS Custom Properties for Performance ■ /* Use CSS custom properties for better performance */ :root { /* Pre-calculated fluid values */

--fluid-ratio : calc ((100 vw - 320 px) / (1200 - 320)) ; --fluid-min : 1 rem ; --fluid-max : 1.125 rem ; --fluid-size : calc (var (--fluid-min) + (var (--fluid-max) - var (--fluid-min)) * var (--fluid-ratio)) ; } .optimized-fluid-text { font-size : clamp (var (--fluid-min) , var (--fluid-size) , var (--fluid-max)) ; } Font Loading Optimization ■ <!-- Preload critical fonts --> < link rel = " preload " href = " /fonts/inter-var.woff2 " as = " font " type = " font/woff2 " crossorigin /> <!-- Use font-display for better performance --> < style > @font-face { font-family : "Inter" ; src : url ("/fonts/inter-var.woff2") format ("woff2") ; font-display : swap ; } </ style > Best Practices ■ 1. Typography Scale ■ Use a consistent scale (1.25 or 1.5 ratio) Ensure sufficient contrast between heading levels Maintain readable line lengths (45-75 characters) 2. Responsive Design ■ Start with mobile-first approach Test typography across all breakpoints Ensure minimum readable sizes 3. Performance ■ Use system fonts as fallbacks Optimize font loading with font-display: swap Minimize font file sizes 4. Accessibility ■ Respect user's font size preferences Maintain sufficient color contrast Provide adequate line spacing 5. Maintenance ■ Use CSS custom properties for consistency Document typography decisions Create reusable typography classes This dynamic font scaling system ensures optimal readability and visual hierarchy across all devices while maintaining performance and accessibility standards.

```css
:root {
  /* Base font settings */
  --font-family-sans-serif: -apple-system, BlinkMacSystemFont, "Segoe UI",
    Roboto, "Helvetica Neue", Arial, sans-serif;
  --font-family-monospace: SFMono-Regular, Menlo, Monaco, Consolas,
    "Liberation Mono", "Courier New", monospace;

  /* Base font size and line height */
  --font-size-base: 1rem;
  --line-height-base: 1.6;

  /* Font weight scale */
  --font-weight-light: 300;
  --font-weight-normal: 400;
  --font-weight-medium: 500;
  --font-weight-semibold: 600;
  --font-weight-bold: 700;

  /* Responsive font size scale */
  --font-size-xs: clamp(0.75rem, 0.7rem + 0.25vw, 0.875rem);
  --font-size-sm: clamp(0.875rem, 0.8rem + 0.375vw, 1rem);
  --font-size-base: clamp(1rem, 0.9rem + 0.5vw, 1.125rem);
  --font-size-lg: clamp(1.125rem, 1rem + 0.625vw, 1.25rem);
  --font-size-xl: clamp(1.25rem, 1.1rem + 0.75vw, 1.5rem);
  --font-size-2xl: clamp(1.5rem, 1.3rem + 1vw, 2rem);
  --font-size-3xl: clamp(2rem, 1.8rem + 1.25vw, 2.5rem);
```

```css
  --font-size-4xl: clamp(2.5rem, 2.2rem + 1.5vw, 3rem);
  --font-size-5xl: clamp(3rem, 2.6rem + 2vw, 4rem);
}
```

```css
/* Display headings */
.display-1 {
  font-size: var(--font-size-5xl);
  font-weight: var(--font-weight-light);
  line-height: 1.2;
}

.display-2 {
  font-size: var(--font-size-4xl);
  font-weight: var(--font-weight-light);
  line-height: 1.2;
}

.display-3 {
  font-size: var(--font-size-3xl);
  font-weight: var(--font-weight-light);
  line-height: 1.2;
}

.display-4 {
  font-size: var(--font-size-2xl);
  font-weight: var(--font-weight-light);
  line-height: 1.2;
}

.display-5 {
  font-size: var(--font-size-xl);
  font-weight: var(--font-weight-light);
  line-height: 1.2;
}

.display-6 {
  font-size: var(--font-size-lg);
  font-weight: var(--font-weight-light);
  line-height: 1.2;
}

/* Regular headings */
.h1,
h1 {
  font-size: var(--font-size-3xl);
  font-weight: var(--font-weight-semibold);
  line-height: 1.2;
  margin-bottom: 0.5rem;
}
```

```css
.h2,
h2 {
  font-size: var(--font-size-2xl);
  font-weight: var(--font-weight-semibold);
  line-height: 1.3;
  margin-bottom: 0.5rem;
}

.h3,
h3 {
  font-size: var(--font-size-xl);
  font-weight: var(--font-weight-medium);
  line-height: 1.4;
  margin-bottom: 0.5rem;
}

.h4,
h4 {
  font-size: var(--font-size-lg);
  font-weight: var(--font-weight-medium);
  line-height: 1.4;
  margin-bottom: 0.5rem;
}

.h5,
h5 {
  font-size: var(--font-size-base);
  font-weight: var(--font-weight-medium);
  line-height: 1.5;
  margin-bottom: 0.5rem;
}

.h6,
h6 {
  font-size: var(--font-size-sm);
  font-weight: var(--font-weight-medium);
  line-height: 1.5;
  margin-bottom: 0.5rem;
}


---

/* Body text */
.lead {
  font-size: var(--font-size-lg);
  font-weight: var(--font-weight-normal);
  line-height: 1.5;
}

p {
  font-size: var(--font-size-base);
```

```css
  font-weight: var(--font-weight-normal);
  line-height: var(--line-height-base);
  margin-top: 1rem;
  margin-bottom: 1rem;
}

/* Small text */
.small,
small {
  font-size: var(--font-size-sm);
  line-height: 1.5;
}

/* Extra small text */
.text-xs {
  font-size: var(--font-size-xs);
  line-height: 1.5;
}
```

```css
/* Fluid heading sizes */
.fluid-heading {
  font-size: clamp(1.5rem, 4vw + 1rem, 3rem);
  line-height: 1.2;
}

.fluid-subheading {
  font-size: clamp(1.125rem, 2.5vw + 0.75rem, 1.75rem);
  line-height: 1.3;
}

.fluid-body {
  font-size: clamp(1rem, 1vw + 0.875rem, 1.125rem);
  line-height: 1.6;
}
```

```scss
// SCSS mixin for fluid typography
@mixin fluid-type($min-vw, $max-vw, $min-size, $max-size) {
  $u1: unit($min-vw);
  $u2: unit($max-vw);
  $u3: unit($min-size);
  $u4: unit($max-size);

  @if $u1 == $u2 and $u1 == $u3 and $u1 == $u4 {
    & {
      font-size: $min-size;
      @media screen and (min-width: $min-vw) {
```

```scss
        font-size: calc(
          #{$min-size} + #{strip-unit($max-size - $min-size)} *
            ((100vw - #{$min-vw}) / #{strip-unit($max-vw - $min-vw)})
        );
      }
      @media screen and (min-width: $max-vw) {
        font-size: $max-size;
      }
    }
  }
}


// Usage
.fluid-text {
  @include fluid-type(320px, 1200px, 16px, 18px);
}



---

/* Responsive font size utilities */
.fs-1 {
  font-size: var(--font-size-5xl) !important;
}
.fs-2 {
  font-size: var(--font-size-4xl) !important;
}
.fs-3 {
  font-size: var(--font-size-3xl) !important;
}
.fs-4 {
  font-size: var(--font-size-2xl) !important;
}
.fs-5 {
  font-size: var(--font-size-xl) !important;
}
.fs-6 {
  font-size: var(--font-size-lg) !important;
}

/* Responsive font sizes */
@media (min-width: 576px) {
  .fs-sm-1 {
    font-size: var(--font-size-5xl) !important;
  }
  .fs-sm-2 {
    font-size: var(--font-size-4xl) !important;
  }
  /* ... more responsive sizes */
}

@media (min-width: 768px) {
```

```css
  .fs-md-1 {
    font-size: var(--font-size-5xl) !important;
  }
  .fs-md-2 {
    font-size: var(--font-size-4xl) !important;
  }
  /* ... more responsive sizes */
}
```

```css
/* Line height utilities */
.lh-1 {
  line-height: 1 !important;
}
.lh-sm {
  line-height: 1.25 !important;
}
.lh-base {
  line-height: 1.5 !important;
}
.lh-lg {
  line-height: 2 !important;
}
```

```css
/* Respect user's font size preferences */
@media (prefers-reduced-motion: reduce) {
  * {
    animation-duration: 0.01ms !important;
    animation-iteration-count: 1 !important;
    transition-duration: 0.01ms !important;
  }
}

/* High contrast mode support */
@media (prefers-contrast: high) {
  :root {
    --font-weight-normal: 500;
    --font-weight-medium: 600;
    --font-weight-semibold: 700;
  }
}
```

```css
/* Ensure minimum readable font sizes */
body {
```

```css
  font-size: max(16px, var(--font-size-base));
}

.small,
small {
  font-size: max(14px, var(--font-size-sm));
}

.text-xs {
  font-size: max(12px, var(--font-size-xs));
}
```

```html
<section class="hero">
  <div class="container">
    <div class="row">
      <div class="col-12">
        <h1 class="fluid-heading mb-4">Welcome to Our Platform</h1>
        <p class="fluid-body lead mb-4">
          Discover amazing features and possibilities with our innovative
          solution.
        </p>
        <button class="btn btn-primary btn-lg">Get Started</button>
      </div>
    </div>
  </div>
</section>
```

```css
.hero {
  padding: 4rem 0;
  text-align: center;
}

.fluid-heading {
  font-size: clamp(2rem, 5vw + 1rem, 4rem);
  font-weight: var(--font-weight-bold);
  line-height: 1.1;
  margin-bottom: 1.5rem;
}

.fluid-body {
  font-size: clamp(1.125rem, 1.5vw + 0.875rem, 1.5rem);
  line-height: 1.5;
  max-width: 600px;
  margin: 0 auto;
}
```

```html
<article class="article">
  <header class="article-header">
    <h1 class="article-title">Article Title</h1>
    <p class="article-meta">Published on <time>2024-01-15</time></p>
  </header>

  <div class="article-content">
    <p class="article-lead">
      This is the lead paragraph that introduces the article content.
    </p>

    <h2>Section Heading</h2>
    <p>Regular paragraph content with optimal line height and spacing.</p>

    <h3>Subsection Heading</h3>
    <p>More content with consistent typography scaling.</p>
  </div>
</article>
```

```css
.article {
  max-width: 65ch;
  margin: 0 auto;
  padding: 2rem 0;
}

.article-title {
  font-size: clamp(2rem, 4vw + 1rem, 3rem);
  font-weight: var(--font-weight-bold);
  line-height: 1.2;
  margin-bottom: 1rem;
}

.article-meta {
  font-size: var(--font-size-sm);
  color: var(--text-muted);
  margin-bottom: 2rem;
}

.article-lead {
  font-size: var(--font-size-lg);
  font-weight: var(--font-weight-medium);
  line-height: 1.6;
  margin-bottom: 2rem;
}

.article-content h2 {
  font-size: clamp(1.5rem, 2.5vw + 1rem, 2rem);
```

```css
  margin-top: 3rem;
  margin-bottom: 1rem;
}

.article-content h3 {
  font-size: clamp(1.25rem, 2vw + 0.875rem, 1.5rem);
  margin-top: 2rem;
  margin-bottom: 0.75rem;
}

.article-content p {
  font-size: var(--font-size-base);
  line-height: var(--line-height-base);
  margin-bottom: 1.5rem;
}
```

```css
/* Use CSS custom properties for better performance */
:root {
  /* Pre-calculated fluid values */
  --fluid-ratio: calc((100vw - 320px) / (1200 - 320));
  --fluid-min: 1rem;
  --fluid-max: 1.125rem;
  --fluid-size: calc(
    var(--fluid-min) + (var(--fluid-max) - var(--fluid-min)) * var(
        --fluid-ratio
      )
  );
}

.optimized-fluid-text {
  font-size: clamp(var(--fluid-min), var(--fluid-size), var(--fluid-max));
}
```

```html
<!-- Preload critical fonts -->
<link
  rel="preload"
  href="/fonts/inter-var.woff2"
  as="font"
  type="font/woff2"
  crossorigin
/>

<!-- Use font-display for better performance -->
<style>
  @font-face {
    font-family: "Inter";
```

```
    src: url("/fonts/inter-var.woff2") format("woff2");
    font-display: swap;
  }
</style>
```